

Please cancel Claims 6, 14, 23, and 33, without prejudice.

REMARKS

Claims 1-38 were pending in the present application. Claims 1-38 were rejected. Applicants have amended Claims 1, 10, 17, 21, 27, 32, and 35 and have cancelled Claims 6, 14, 23, and 33, without prejudice. Reconsideration is respectfully requested in light of the present amendments and following remarks. The above amendments and following remarks are believed to be fully responsive to the Outstanding Office Action. Upon entry of these amendments and consideration of these remarks, Applicants submit that all of the pending claims will be allowable.

Claim Rejections - 35 USC § 102

Claims 1-3, 6, 7, 17, 18, 27, 29, 30, 32, 33 and 35-38 were rejected under 35 U.S.C. § 102(b) as being anticipated by Clark et al. (US 5,820,409). Applicants respectfully request reconsideration of the rejections of Claims 1-3, 6, 7, 17, 18, 27, 29, 30, 32, 33 and 35-38 in light of the present amendments and the following remarks.

Claim 1:

The Office Action states that Clark et al. disclose (Fig. 12) a connector for use in a plasma arc apparatus comprising a housing 24 defining a hollow internal channel, at least one locking finger 31 disposed within the hollow internal

channel; and a pin 17 defining a first collar (left of 22) with a shoulder 22 disposed thereon, wherein the locking finger engages the shoulder to secure the pin within the housing.

Although Clark et al. disclose “deflectable fingers 31,” the fingers of Clark et al. are not locking fingers in that an additional element, namely, the “wedges 33” are required to “apply pressure to the deflectable fingers such that they engage the pin collars.” (Column 5, Lines 41-43). The deflectable fingers do not lock, i.e. they do not hold the pin within the connector. Rather, the wedges “hold the pins in the fingers” (Column 5, Lines 40-41). Thus, the deflectable fingers alone are not capable of securing the pin, since without the wedge, the pin could be translated such that the deflectable fingers would deflect radially outward, thereby allowing removal of the pin.

The locking fingers according to the claimed embodiment do not require an additional element, such as the wedge 33 required in Clark et al., to secure the pin within the housing. Further, Claim 1 has been amended to require the second collar of the pin being engaged by the housing shoulder within the hollow internal channel, wherein the housing shoulder is disposed proximally from the locking finger. The housing shoulder of the claimed embodiment engages the second collar of the pin to prevent movement of the pin in the distal direction. Clark et al. does not disclose a housing shoulder disposed proximally from the deflectable fingers that prevents distal movement of the pin. Furthermore, preventing movement of the pin in a distal direction is only accomplished through the use of the wedges. Without the wedges, the pin of Clark et al. can be

removed in the distal direction. The pin according to the claimed embodiment is secured within the housing such that removal of the pin cannot be achieved without physically damaging a portion of the connector. Moreover, the connector of Clark et al. is not a connector for use in a plasma arc apparatus. Since Clark et al. does not disclose locking fingers or a shoulder within the housing that engages a second collar to prevent movement in the distal direction, Clark et al. cannot anticipate amended Claim 1. Accordingly, Applicants respectfully request that the rejection of Claim 1 be withdrawn.

Claims 2, 3, 6, 7:

The Office Action states that Clark et al. discloses a tapered portion of the pin disposed between the first collar and the tapered portion, the locking finger being integrally formed within the hollow internal channel, a second collar, and the pin being recessed within a second portion of the hollow internal channel.

Claims 2, 3, and 7 depend from Claim 1 and distinguish over Clark et al. for at least the reasons stated above in connection with amended Claim 1. Accordingly, Applicants respectfully request that the rejections of Claims 2, 3, and 7 be withdrawn. Claim 6 has been cancelled, without prejudice, and this rejection is therefore moot.

Claim 17:

The Office Action states that Clark et al. disclose a connector comprising a housing 24 defining a hollow internal channel with a first and second portion, a

locking finger disposed within the hollow internal channel, a pin defining a first collar with a shoulder disposed thereon, and a second collar disposed along the pin, wherein the second collar slidably blocks access to the locking finger through the first portion, the pin being recessed within the second portion, and the locking finger engaging the shoulder to secure the pin within the housing.

Claim 17 has been amended to require the second collar of the pin being engaged by the housing shoulder within the hollow internal channel, wherein the housing shoulder is disposed proximally from the locking finger. As discussed above in connection with Claim 1, Clark et al. does not disclose a shoulder disposed proximally from the deflectable fingers that prevents distal movement of the pin. Furthermore, preventing movement of the pin in a distal direction is only accomplished through the use of the wedges. Without the wedges, the pin of Clark et al. can be removed in the distal direction. The pin according to the claimed embodiment is secured within the housing such that removal of the pin cannot be achieved without physically damaging a portion of the connector. Moreover, the connector of Clark et al. is not a connector for use in a plasma arc apparatus. Since Clark et al. does not disclose locking fingers or a shoulder within the housing that engages a second collar of the pin to prevent movement in the distal direction, Clark et al. cannot anticipate amended Claim 17. Accordingly, Applicants respectfully request that the rejection of Claim 17 be withdrawn.

Claim 18:

The Office Action states that Clark et al. disclose the locking finger being integrally formed within the hollow internal channel. Claim 18 depends from Claim 17 and distinguishes over Clark et al. for at least the reasons stated above in connection with amended Claim 17. Accordingly, Applicants respectfully request that the rejection of Claim 18 be withdrawn.

Claim 27:

The Office Action states that Clark et al. disclose a housing for use in connecting a pin in a plasma arc apparatus comprising a hollow internal channel and at least one locking finger that engages the pin to secure the pin within the housing.

Claim 27 has been amended to require the shoulder within the hollow internal channel engaging the pin to prevent movement of the pin in the distal direction, wherein the locking finger is disposed distally from the shoulder. As discussed above in connection with Claim 1, Clark et al. does not disclose a shoulder that prevents movement of the pin in a distal direction. Furthermore, preventing movement of the pin in a distal direction is only accomplished through the use of the wedges. Without the wedges, the pin of Clark et al. can be removed in the distal direction. The pin according to the claimed embodiment is secured within the housing such that removal of the pin cannot be achieved without physically damaging a portion of the connector. Moreover, the connector of Clark et al. is not a connector for use in a plasma arc apparatus. Since Clark

et al. does not disclose locking fingers or a shoulder within the housing that engages a second collar to prevent movement in the distal direction, Clark et al. cannot anticipate amended Claim 27. Accordingly, Applicants respectfully request that the rejection of Claim 27 be withdrawn.

Claims 29, 30:

The Office Action states that Clark et al. disclose a pin that slidably engages a first portion of the hollow internal channel and a pin recessed within a second portion of the hollow internal channel. Claims 29 and 30 depend from Claim 27 and distinguish over Clark et al. for at least the reasons stated above in connection with amended Claim 27. Accordingly, Applicants respectfully request that the rejections of Claims 29 and 30 be withdrawn.

Claim 32:

The Office Action states that Clark et al. disclose a pin for use in a plasma arc apparatus that comprises a first collar and a shoulder disposed on the first collar, wherein the shoulder is engaged by a housing to secure the pin within the housing.

Claim 32 has been amended to require the second collar disposed proximally from the first collar, wherein a locking finger disposed within a housing prevents movement of the pin in a proximal direction, and the second collar is engaged by a shoulder disposed within the housing to prevent movement of the pin in a distal direction. As discussed above in connection with Claim 1, Clark et

al. does not disclose a pin that is prevented from movement in a distal direction by a shoulder disposed within a housing. Furthermore, preventing movement of the pin in a distal direction is only accomplished through the use of the wedges. Without the wedges, the pin of Clark et al. can be removed in the distal direction. The pin according to the claimed embodiment is secured within the housing such that removal of the pin cannot be achieved without physically damaging a portion of the connector. Moreover, the pin of Clark et al. is not a pin for use in a plasma arc apparatus. The distinction being that the pin according to the claimed embodiment conducts both gas and electric power, while the pin of Clark et al. conducts only electric power. Since Clark et al. does not disclose a pin that engages a shoulder within the housing to prevent movement in a distal direction, Clark et al. cannot anticipate amended Claim 32. Accordingly, Applicants respectfully request that the rejection of Claim 32 be withdrawn.

Claim 33:

The Office Action states that Clark et al. disclose a second collar disposed along the pin that blocks access to the shoulder. Claim 33 has been cancelled, without prejudice, and this rejection is therefore moot.

Claim 35:

The Office Action states that Clark et al. disclose an improvement to a connector comprising a tamper resistant connection between the housing and

the pin comprising a shoulder disposed on the pin and locking fingers disposed within a hollow internal channel that resist removal of the pin.

Claim 35 has been amended to require the first collar of the pin being engaged by the locking fingers and the second collar of the pin being engaged by the housing shoulder within the hollow internal channel, wherein the housing shoulder is disposed proximally from the locking finger. As discussed above in connection with Claim 1, Clark et al. does not disclose a shoulder disposed proximally from the deflectable fingers that prevents distal movement of the pin. Furthermore, preventing movement of the pin in a distal direction is only accomplished through the use of the wedges. Without the wedges, the pin of Clark et al. can be removed in the distal direction. The pin according to the claimed embodiment is secured within the housing such that removal of the pin cannot be achieved without physically damaging a portion of the connector. Moreover, the connector of Clark et al. is not a connector for use in a plasma arc apparatus. Since Clark et al. does not disclose locking fingers or a shoulder within the housing that engages a second collar to prevent movement in the distal direction, Clark et al. cannot anticipate amended Claim 35. Accordingly, Applicants respectfully request that the rejection of Claim 35 be withdrawn.

Claims 36-38:

The Office Action states that Clark et al. disclose a pin sized to closely conform to the hollow internal channel, locking fingers sloping inwardly and distally, and a relatively long, restricted space between the pin and the hollow

internal channel that restricts access to the fingers. Claims 36-38 depend from Claim 35 and distinguish over Clark et al. for at least the reasons stated above in connection with amended Claim 35. Additionally, the deflectable fingers of Clark et al. do not slope inwardly as do the locking fingers of the claimed embodiment. The deflectable fingers of Clark et al. are disposed parallel to the centerline of the pin and the connector. Accordingly, Applicants respectfully request that the rejections of Claims 36-38 be withdrawn.

Claim Rejections - 35 USC § 103

Claims 4, 9, 19, 31, and 34:

Claims 4, 9, 19, 31 and 34 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Clark et al., as applied to the claims above. Applicants respectfully request reconsideration of these rejections in light of the present amendments and the following remarks.

The Office Action states that Clark et al. disclose the invention substantially as claimed, but do not disclose the housing and the locking finger comprising a fiber-reinforced nylon material nor the pin comprising a brass material and that it would have been obvious to one having ordinary skill in the art to select such materials.

Claims 4 and 9 depend from Claim 1 and distinguish over Clark et al. for at least the reasons given above in connection with Claim 1. Claim 19 depends from Claim 17 and distinguishes over Clark et al. for at least the reasons given above in connection with Claim 17. Claim 31 depends from Claim 27 and

distinguishes over Clark et al. for at least the reasons given above in connection with Claim 27. Claim 34 depends from Claim 32 and distinguishes over Clark et al. for at least the reasons given above in connection with Claim 32. Therefore, the claimed embodiments as set forth in Claims 4, 9, 19, 31 and 34 are not obvious. Accordingly, Applicants respectfully request that the rejections of Claims 4, 9, 19, 31 and 34 be withdrawn.

Claims 5, 20, and 28:

Claims 5, 20 and 28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Clark et al., as applied to the claims above, in view of Eifler (US 4,406,507). Applicants respectfully request reconsideration of these rejections in light of the present amendments and the following remarks.

The Office Action states that Clark et al. discloses the invention as substantially claimed, and that Eifler teaches six fingers, and discloses, more or less fingers, thus concluding that it would have been obvious to one having ordinary skill in the art to use eight, evenly spaced, fingers:

Claim 5 depends from Claim 1 and distinguishes over Clark et al. for at least the reasons given above in connection with Claim 1. Claim 20 depends from Claim 17 and distinguishes over Clark et al. for at least the reasons given above in connection with Claim 17. Claim 28 depends from Claim 27 and distinguishes over Clark et al. for at least the reasons given above in connection with Claim 27. Therefore, the claimed embodiments as set forth in Claims 5, 20,

and 28 are not obvious. Accordingly, Applicants respectfully request that the rejections of Claims 5, 20, and 28 be withdrawn.

Claims 8, 10-12, 14-16, 21 and 23-26:

Claims 8, 10-12, 14-16, 21 and 23-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Clark et al. in view of Applicant's Admitted Prior Art ("A.A.P.A."). Applicants respectfully request reconsideration of these rejections in light of the present amendments and the following remarks.

Claims 8, 10, 21:

The Office Action states that Clark et al. disclose the invention substantially but do not disclose the pin being a gas carrying pin, and that in light of A.A.P.A. it would have been obvious to one having ordinary skill in the art to modify the pin of Clark et al. with a gas carrying pin.

Claim 8 depends from Claim 1 and distinguishes over Clark et al. for at least the reasons given above in connection with Claim 1. Claim 10 and 21 have been amended to require the second collar of the negative gas lead carrying pin being engaged by the housing, thereby preventing movement of the negative gas carrying pin in the distal direction. As discussed above in connection with Claim 1, Clark et al. does not disclose a second collar being engaged by the housing to prevent movement of the negative gas carrying pin in the distal direction. Furthermore, preventing movement of the pin in a distal direction is only accomplished through the use of the wedges. Without the wedges, the pin of

Clark et al. can be removed in the distal direction. The negative lead gas carrying pin according to the claimed embodiment is secured within the housing such that removal of the pin cannot be achieved without physically damaging a portion of the connector. Moreover, the connector of Clark et al. is not a connector for use in a plasma arc apparatus. Since Clark et al. does not disclose a housing that engages a second collar to prevent movement in the distal direction, the claimed embodiments as set forth in Claims 8, 10, and 21 are not obvious. Accordingly, Applicants respectfully request that the rejections of Claims 8, 10, and 21 be withdrawn.

Claims 11, 14, 15:

The Office Action states that Clark et al. disclose locking fingers integrally formed within the hollow internal channel, a second collar, and the pin recessed within a second portion of the hollow internal channel.

Claim 11 and Claim 15 depend from Claim 10 and distinguish over Clark et al. for at least the reasons stated above in connection with amended Claim 10. Therefore, the claimed embodiments as set forth in Claim 11 and Claim 15 are not obvious. Accordingly, Applicants respectfully request that the rejections of Claims 11 and 15 be withdrawn. Claim 14 has been cancelled, without prejudice, and this rejection is therefore moot.

Claims 23 and 24:

Claim 24 depends from Claim 21 and distinguishes over Clark et al. for at least the reasons stated above in connection with amended Claim 21. Therefore, the claimed embodiment as set forth in Claim 24 is not obvious. Accordingly, Applicants respectfully request that the rejection of Claim 24 be withdrawn. Claim 23 has been cancelled, without prejudice, and this rejection is therefore moot.

Claims 12, 16, 25 and 26:

The Office Action states that Clark et al. disclose the invention substantially as claimed, but do not disclose the housing and the locking finger comprising a fiber-reinforced nylon material nor the pin comprising a brass material and that it would have been obvious to one having ordinary skill in the art to select such materials.

Claims 12 and 16 depend from Claim 10 and distinguish over Clark et al. for at least the reasons stated above in connection with amended Claim 10. Claims 25 and 26 depend from Claim 21 and distinguish over Clark et al. for at least the reasons stated above in connection with amended Claim 21. Therefore, the claimed embodiments as set forth in Claims 12, 16, 25, and 26 are not obvious. Accordingly, Applicants respectfully request that the rejections of Claims 12, 16, 25, and 26 be withdrawn.

Claims 13 and 22:

Claims 13 and 22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Clark et al. in view of A.A.P.A. as applied to the claims above, and further in view of Eifler. Applicants respectfully request reconsideration of these rejections in light of the present amendments and the following remarks.

The Office Action states that Clark et al. discloses the invention as substantially claimed, and that Eifler teaches six fingers, and discloses, more or less fingers, thus concluding that it would have been obvious to one having ordinary skill in the art to use eight, evenly spaced, fingers.

Claim 13 depends from Claim 10 and distinguishes over Clark et al. for at least the reasons stated above in connection with amended Claim 10. Claim 22 depends from Claim 21 and distinguishes over Clark et al. for at least the reasons stated above in connection with amended Claim 21. Therefore, the claimed embodiments as set forth in Claims 13 and 22 are not obvious. Accordingly, Applicants respectfully request that the rejections of Claims 13 and 22 be withdrawn.

For at least the reasons set forth above and in view of the amendments and remarks submitted herewith, Applicants submit that the present application is in condition for allowance. Therefore, Applicants respectfully request that the Examiner pass the case to issue at his earliest convenience. If it would advance the prosecution of this application, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

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Attachment for Claim Amendments

The following is a marked up version of each amended claim in which underlines indicate insertions and brackets indicate deletions.

1. (Amended) A connector for use in a plasma arc apparatus comprising:

a housing defining a hollow internal channel, the hollow internal channel comprising a shoulder;

at least one locking finger disposed within the hollow internal channel and disposed distally from the shoulder; and

a pin comprising: [defining]

a first collar with a shoulder disposed thereon[,]; and

a second collar disposed proximally from the first collar,

wherein the locking finger engages the pin shoulder to [secure the pin within the housing] prevent movement of the pin in a proximal direction and the housing shoulder engages the second collar of the pin to prevent movement of the pin in a distal direction without a member disposed between the locking finger and the housing.

6. (Cancelled) The connector of Claim 1, wherein the pin further comprises a second collar disposed along the pin that blocks access to the locking finger through a first portion of the hollow internal channel.

10. (Amended) A connector for use in a plasma arc apparatus comprising:

a plug housing defining a hollow internal channel with a first portion and a second portion;

a plurality of locking fingers disposed within the hollow internal channel between the first portion and the second portion; and

a negative lead gas carrying pin [defining a tapered portion and] comprising a first collar with a shoulder disposed [therebetween] thereon, and a second collar disposed proximally from the first collar,

wherein the locking fingers engage the [tapered portion and the] shoulder [to secure] to prevent movement of the negative lead gas carrying pin [within the plug housing] in a proximal direction, and the housing engages the second collar to prevent movement of the negative lead gas carrying pin in a distal direction.

14. (Cancelled) The connector of Claim 10, wherein the pin further comprises a second collar disposed along the pin that blocks access to the locking fingers through a first portion of the hollow internal channel.

17. (Amended) A connector comprising:

a housing defining a hollow internal channel, the hollow internal channel comprising a first portion, [and] a second portion, and a shoulder;

at least one locking finger disposed within the hollow internal channel and disposed distally from the shoulder;

a pin defining a first collar with a shoulder disposed thereon; and

a second collar disposed [along the pin] proximally from the first collar,

wherein the second collar slidably blocks access to the locking finger through the first portion of the hollow internal channel, the pin is recessed within the second portion of the hollow internal channel, [and] the locking finger engages the pin shoulder to [secure the pin within the housing] prevent movement of the pin in a proximal direction, and the housing shoulder engages the second collar to prevent movement of the pin in a distal direction.

21. (Amended) A connector for use between a power supply and a torch lead in a plasma arc apparatus, the connector comprising:

 a plug housing defining a hollow internal channel;
 a plurality of locking fingers integrally formed with the plug housing and disposed within the hollow internal channel; and

 a negative lead gas carrying pin defining a first collar with a shoulder disposed thereon, and a second collar disposed distally from the first collar;

 wherein the locking fingers engage the shoulder to [secure] prevent movement of the negative lead gas carrying pin [within the housing] in a proximal direction and the plug housing engages the second collar to prevent movement of the negative lead gas carrying pin in a distal direction.

23. (Cancelled) The connector of Claim 21, wherein the negative lead gas carrying pin further comprises a second collar disposed along the pin that blocks access to the plurality of locking fingers through a first portion of the hollow internal channel.

27. (Amended) A housing for use in connecting a pin in a plasma arc apparatus comprising:

a hollow internal channel comprising a shoulder; and

at least one locking finger disposed within the hollow internal channel and disposed distally from the shoulder,

wherein the locking finger engages the pin to [secure the pin within the housing] prevent movement of the pin in a proximal direction, and the shoulder engages the pin to prevent movement of the pin in a distal direction.

32. (Amended) A pin for use in a plasma arc apparatus comprising:

a first collar comprising a shoulder; and

[a shoulder disposed on the first collar,]

a second collar disposed proximally from the first collar,

wherein the shoulder is engaged by a locking finger disposed within a housing to [secure the pin within the housing] prevent movement of the pin in a proximal direction, and the second collar is engaged by a shoulder disposed within the housing to prevent movement of the pin in a distal direction.

33. (Cancelled) The pin of Claim 32 further comprising a second collar disposed along the pin that blocks access to the shoulder.

35. (Amended) In a connector for making a connection in a plasma arc apparatus to provide fluid and electric power, the connector having a housing mounting a pin for conducting fluid and electric power, the improvement comprising:

a tamper resistant connection between the housing and the pin comprising:

a [shoulder disposed on the pin] first collar;
a second collar disposed proximally from the first collar; and
a hollow internal channel within the housing to receive the pin, the hollow internal channel comprising a plurality of locking fingers [disposed therein to engage the shoulder and resist removal of the pin from the hollow internal channel] and a shoulder disposed proximally from the locking fingers, wherein the locking fingers engage the first collar to secure the pin in a proximal direction and the housing shoulder engages the second collar to secure the pin in a distal direction.

39. (New) A connector for use in a plasma arc apparatus comprising:
a housing defining a hollow internal channel, the hollow internal channel comprising a shoulder;
at least one locking finger disposed within the hollow internal channel and spaced distally from the shoulder; and
a pin comprising:
a first collar; and
a second collar disposed proximally from the first collar,
wherein the locking finger engages the first collar to secure the pin in a proximal direction and the shoulder engages the second collar to secure the pin in a distal direction.

40. (New) A connector for use in a plasma arc apparatus comprising:

a housing defining a hollow internal channel;
at least one locking finger disposed within the hollow internal
channel; and
a pin disposed within the housing and comprising:
a first collar with a shoulder disposed thereon; and
a second collar disposed proximally from the first collar,
wherein the locking finger engages the shoulder and the housing engages
the second collar such that the pin cannot be removed without destruction of the
connector.

41. (New) A connector for use in a plasma arc apparatus comprising:
a housing defining a hollow internal channel;
at least one locking finger disposed within the hollow internal
channel, the locking finger sloping inwardly and distally; and
a pin comprising:
a first collar; and
a second collar disposed proximally from the first collar,
wherein the locking finger engages the first collar to secure the pin in a
proximal direction and the housing engages the second collar to secure the pin in
a distal direction.